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IMAGES IN CARDIOLOGY

64 multidetector CT in patent foramen ovale

A 47-year-old woman was referred for a coronary CT angiography (64-slice scanner, Toshiba Aquilion, Tustin, California, USA). Retrospective ECG-gated datasets were acquired (collimation, 64×0.5 mm; table feed per rotation, 7.2 mm; rotation, 400 ms; tube voltage, 120 kV; and tube current, 500 mA). Using a segmented image reconstruction algorithm, a temporal resolution of <100 ms was achieved. Before scan, the heart rate was lowered to 65 bpm by 50 mg oral metoprolol. Contrast enhancement was achieved with 65 ml of Iohexol (Omnipaque 350 mg/ml, Amersham Health, Cork, Ireland) injected at 5 ml/s, followed by an injection of 50 ml of saline at 5 ml/s. Scanning initiation was triggered automatically at the threshold of 180 Hounsfield Units in the descending aorta. Using this technique, the right heart was washed out of contrast by saline chaser. This provides enough contrast to demonstrate small shunt across the interatrial septum. Presented images show a small patent foramen ovale with the jet of contrast moving from the left to the right atrium.

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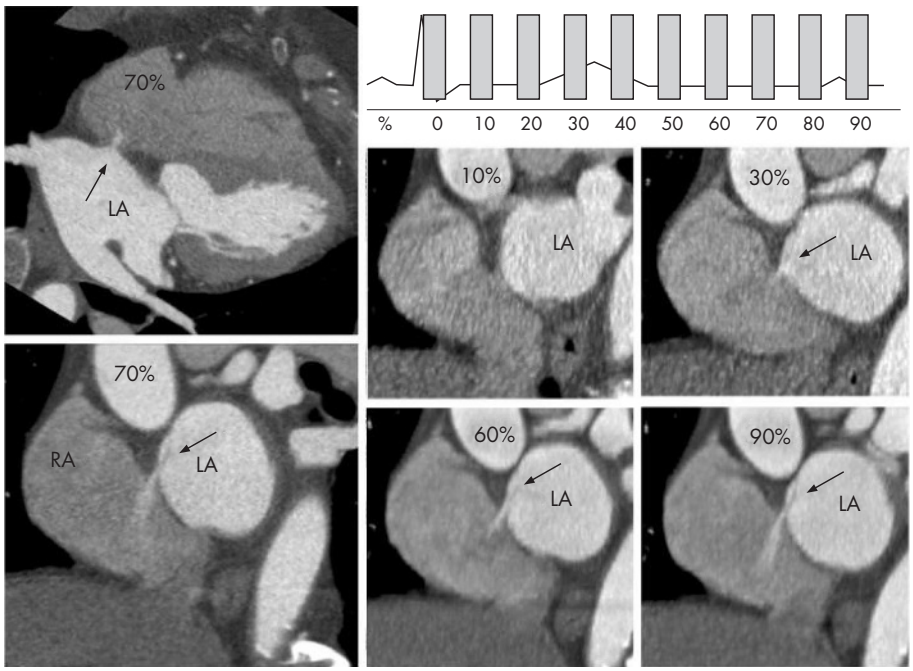

Long- and short-axis images through the interatrial septum show a small patent foramen ovale (arrows) with the jet of contrast from the left atrium (LA) to the right atrium (RA). The right heart is less dense due to washout of contrast by saline chaser. Cardiac images are obtained on the basis of relative timing intervals in steps of 10% of the R-R interval in cardiac cycle. The centre of reconstruction is placed at the relative point as shown in the diagram (top right). On the left side, high-resolution long- and short-axis views are reformatted from diastolic datasets centred at 70% of the R-R interval, with a slice thickness of 0.5 mm and increments of 0.3 mm. On the right, short-axis cine frames (2 mm thickness) from collected data at 10%, 30%, 60% and 90% intervals are shown.